SpEakWise VR: exploring the use of social virtual reality in telecollaborative foreign language learning between learners of English and German

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Abstract. This paper discusses the potential of immersing foreign language learners in Social Virtual Reality (SVR) in an international seminar, designed by the authors, called SpEakWise VR, combining the tandem language learning paradigm with gamification in immersive virtual environments. SpEakWise VR builds on an existing telecollaboration (SpEakWise) between undergraduate students in Trinity College Dublin and Hildesheim University. We set out to explore how inclusion of an SVR activity influences student engagement, learning involving intercultural and multilingual problem solving, and team building. This paper presents initial observations from our research, concerning multimodality in embodied immersion and code-switching, and proposes future avenues of inquiry.

Keywords: social virtual reality, digital game-based language learning, telecollaboration, pragmatic competence, embodiment.

1.   Introduction

SpEakWise is a telecollaborative seminar running annually since 2007 between Trinity College Dublin and the University of Hildesheim, involving undergraduate students of languages and intercultural communication at both universities. The seminar's aim is to foster foreign language skills (German and English) and the development of pragmatic and critical cultural awareness,

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and, with this, to promote intercultural competence (Martin, O'Sullivan, & O'Rourke, 2013). SpEakWise has been optimized in response to evolving technologies: in early iterations, students interacted via web chat and in recent years via videoconferencing. The most recent version has seen the integration of a collaborative activity in an SVR context, which is the focus of this paper. Our concept unites the idea of tandem language learning (Telles, 2015) with gamification (Reinders & Wattana, 2015) and insights from the embodied and 'empractic', i.e. 'hands-on', character of VR experiences.

SVR is a new social medium with growing relevance beyond universities and classrooms (Senkbeil, 2021). It offers an innovative way of bringing students together in virtual learning spaces and providing an experience of quasi-embodied co-presence across geographical distance, through VR avatars. With the help of the developer's kit of the SVR platform RecRoom, we created virtual environments in which our students solve multilingual cooperative puzzles together to progress through an 'escape room'-style adventure which challenges them to test and improve their communicative problem solving competencies in their target language. It functions at the intersection of telecollaboration and Digital Game-Based Language Learning (DGBLL), augmented by the experience of VR as a space to meet, communicate, co-orientate, and coordinate action (Senkbeil, 2021).

As opposed to screen-based virtual environments, VR creates the feeling for its users that they are involved in an actual three-dimensional world existing beyond the physical space that they normally inhabit, defined as the s*ense of presence* (Lombard & Ditton, 1997). Our pilot studies on communication in SVR show that such discourse functions differently compared to screen-based digital-social interactions, because VR arguably influences its user in a more intensive, more visceral way than other media (Senkbeil, 2021; Senkbeil, Ahlers, Lazovic, & Schweiger, 2020). VR users often feel that they embody the avatar whose first-person perspective they share, rather than merely controlling a character from a third-person viewpoint. This *sense of embodiment* can result in intensive forms of the 'proteus effect' (Yee & Bailenson, 2007): given a high sense of presence in a VR experience, users do not mimetically 'act as if' they are that avatar, they *are* that avatar in that particular time and space.

As there exists only limited research on the integration of immersive environments in tertiary-level teaching, we are broadly exploring how the inclusion of an SVR activity impacts on student engagement and learning in situations involving intercultural and multilingual problem solving and team building. Our research

also seeks to contribute to theory building concerning the impact of embodied immersion on communication through SVR.

For SpEakWise VR, we seek to exploit these effects, informed by insights from cognitive linguistics, particularly the theory of embodied cognition, highlighting that there are strong associations between language acquisition, space, and motor concepts (Barsalou, 2008; Pulvermüller, Hauk, Nikulin, & Ilmoniemi, 2005). Our research furthermore involves theoretical-methodological models from linguistic pragmatics that emphasize 'empractic' language use (Bühler, 2011 [1934]), i.e. linguistic action intertwined with non-linguistic activities.

2.   Design of tasks and implementation

The SpEakWise VR environments are designed to meet the requirements of tandem language learning and gamification, and to utilize the embodied and empractic character of VR experiences as mentioned above. The environments have a modular and adaptable structure: two to four players can play two to four 'levels' together, each taking about five minutes to solve. The gamification elements involve 'escape room'-style collaborative puzzles in relatively small areas, so that users are always able to see and hear each other. Each team is divided in two halves, separated by a fence in the environment. The fence cannot be traversed, but communication and vision across it are unimpeded. The information necessary to solve the puzzle is split between the areas on either side of the fence, meaning that students must engage in negotiation of meaning across languages and cultures to succeed in the task. As is usual in language tandems, SpEakWise VR students were given the guideline that they should try to speak 50% of the time in German and 50% in English.

The 27 students participating in the SVR activity had already been engaging with each other over several weeks via videoconferencing. The activity involves two stages. In the first stage, groups of four students (two Dublin and two Hildesheim) engage in a brief 'warm-up' activity, learning to move and interact with the head-mounted displays and handheld controllers. The DGBLL activity immediately follows, in which the students encounter the problem solving situations. Each session lasts 20-30 minutes, is recorded, and subsequently transcribed following conversation analytic principles. Students complete debriefing interviews about their experience.

As our research is at an early stage, we summarize our initial observations on the intersection of language practice and immersion in a virtual environment in the following section.

3.   Initial observations from our research

One striking effect of the observed SVR interactions has been the employment of all multimodal affordances provided by the technology to achieve communicative success (here: finding solutions to collaborative puzzles). Students use their virtual embodiment (i.e. the intuitive mapping of their physical motions onto their avatars) to co-orientate with their listeners, to align viewpoints, and to gesture directions or the shape of objects. In contrast to videoconferencing, however, students engage with each other not just linguistically but also (quasi-)physically in a 3D virtual space. This invites researchers and teachers to pay attention particularly to lexical fields connected to space and motion (prepositions, deictics), pragmatic patterns to create co-ordinated attention, and giving directions (Senkbeil et al., 2020).

Further, while we did not police the guideline around language use strictly (see Section 2), we observed quite frequently intensive forms of code-switching. For example, an Irish student, following German instructions to deduce the number code which opens the door to the next level, explained to her German listeners:

> "the first number is three and then the second number is eins weniger als die erste Zahl, so it's two" (En1, SpEakWise in-game corpus).

Such cases demonstrate students' involvement and intrinsic motivation to solve the task and continue their 'adventure'. Learners creatively use all linguistic and multimodal affordances in – almost always – communicatively successful ways. The students themselves commented in debriefing interviews on code-switching as an effective means to an end. For example, a Trinity College Dublin student observed:

> "It was interesting with the languages, I thought, how we changed between… as far as I felt it didn't feel as if one language was dominating. We were switching between German and English quite frequently. And it was a really nice way [to communicate]" (En3, SpEakWise debriefing corpus).

More generally, the debriefing interviews indicate that students are motivated, engaged, and experience SVR as a positive addition to their language learning journey.

4. Next steps in the development of SpEakWise VR and conclusion

Based on initial observations from our study, SVR seems to elicit the employment of all multimodal communicative affordances, particularly based on learners' experience of a sense of virtual embodiment through their avatars. SVR provides the potential for an empractic, i.e. 'hands-on' approach to certain lexical fields, e.g. motion verbs, locations, prepositions, and deixis. Our next steps include further upscaling of the immersive experience (more users simultaneously, longer immersion, a growing variety of communicative challenges, etc.). Our research will continue to employ conversation-analytical methods, e.g. turn-by-turn analysis of transcripts. Moreover, we will add empirical measurements of learners' progress, and work with user feedback to further improve the seminar.

5. Acknowledgments

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Edited by Birna Arnbjörnsdóttir, Branislav Bédi, Linda Bradley, Kolbrún Friðriksdóttir, Hólmfríður Garðarsdóttir, Sylvie Thouësny, and Matthew James Whelpton